Functional Requirements Document

Version 2.0

National Guard Bureau

October 28, 2004

DOCUMENT CHANGE HISTORY

The table below summarizes all of the changes that have been incorporated into the DTTP Functional Requirements Document.

Version #	Change #	Date	Description
1	1	June 2001	Initial Submittal
2.0		October 28, 2004	Update approved by the RCB on 28 Oct 2004

Executive Summary

The Distributive Training Technology Project (DTTP) was established at the direction of Congress with the Chief, National Guard Bureau as the Executive Agent. The Director, Army National Guard (ARNG), the Director, Air National Guard (ANG), and the National Guard Bureau (NGB) Chief Information Officer (CIO) support Distributed Learning (DL), and are encouraging joint development of a broad DL effort.

DTTP began fielding Distributive Learning Classrooms in 1996. The DTTP infrastructure with classrooms connected together via a network is in place. There are DTTP classrooms in all 50 states, the District of Columbia, Guam, Puerto Rico and the U.S. Virgin Islands..

The initial design was based on best practice associated with emerging distributed learning and teaching methodologies. The technology deployed satisfied the initial definition of a distance-learning environment. The ARNG has monitored the use of the classrooms and their capability to deliver distributed learning, listened to instructor and student feedback, monitored maintainability, and interoperability with other Department of Defense (DoD) programs. Classroom design has evolved based on the evolution of the technology. The functional requirements have also evolved based on evolving needs of the classroom users.

This document contains the most up-to-date functional requirements for DTTP. Section 1 of the document provides background information, defines the project scope, lists assumptions, and identifies significant roles played by different organizations. Section 2 documents the requirements. The requirements are divided into seven areas: General Requirements, Courseware Repository System Requirements, Systems Security Requirements, System Interface Requirements, Command and Control Requirements, Shared Use Requirements, and Storable Classroom requirements. Acronyms and Abbreviations are listed in Appendix A. Status of requirements implementation is listed in Appendix B.

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1 Introduction

This section provides background on the Distributive Training Technology Project (DTTP), defines the scope of the project, identifies any assumptions and constraints, and documents the roles and responsibilities of various Army National Guard (ARNG), Air National Guard (ANG), and Army organizations during the redesign efforts.

1.1 Background

The National Guard (NG) has a unique, dual mission that consists of both Federal and State roles. Although the force's primary mission is to serve as a federal reserve force, the NG has an equally important role in support of the states. The federal mission is to "maintain properly trained and equipped units available for prompt mobilization for war, national emergency or as otherwise needed." The state mission is to "provide trained and disciplined forces for domestic emergencies or as otherwise required by state laws."

DTTP was established at the direction of Congress with the Chief, National Guard Bureau (NGB) as the Executive Agent. The Director, ARNG; the Director, ANG; and the NGB Chief Information Officer (CIO) support Distributed Learning (DL), and are encouraging joint development of a broad DL effort.

The Army Distance Learning Plan (TADLP) and the ARNG Mission Needs Statement (MNS) identify the need for a modernized training system. The Army National Guard Operational Requirements Document (ORD) for a Distributed Training Technology sets the performance and operational parameters for a Distributive Training Technology (DTT) system. The NGB DTT system must provide a high-speed information access capability for the improvement of soldier readiness, to support State Command and Control requirements and increase the quality of life in the communities where National Guard soldiers live and work. The Joint Army and Air National Guard Advanced Distributed Learning (ADL) Strategic Plan provides the vision, values, mission, goals and objectives to take the National Guard ADL program through the next decade. The vision of this plan is to provide: *"State of the art learning, anytime/anywhere, in support of America."* The technology necessary to support ADL is state of the art and therefore constantly changing. Distributed learning courseware must meet the standards established for training the same subjects in Army service schools, colleges and academies. Army Training Division, NGB (NGB-ART) and the Army Training and Doctrine Command (TRADOC) are working together to develop DL courseware to improve readiness. Distributive Training Technology is available in the fifty states, the District of Columbia, Guam, Puerto Rico and the U.S. Virgin Islands. The ultimate goal is to develop DL courseware to improve readiness.

DTTP began fielding Distributive Training Technology Classrooms in 1996. The initial design was based on best practice associated with emerging distance learning and teaching methodologies. The technology deployed satisfied the initial definition of a distance-learning

environment. The ARNG has monitored the use of the classrooms and their capability to deliver distributed learning, listened to instructor and student feedback, monitored maintainability, and interoperability with other Department of Defense (DoD) programs. Classroom design has evolved based on the evolution of the technology. Functional requirements have also evolved based on evolving needs of the classroom users and advances in available technology.

The NGB DTT system provides the local high-speed information access capability necessary for improvement of National Guard soldier readiness. The system supports the training mission area (The Army School System (TASS) and Force XXI) by providing a means to deliver flexible, exportable, and effective training. Goals for the DTT system are:

- Improve readiness by providing greater access to military training and education. This includes Military Occupational Specialty (MOS) training, functional courses, officer and noncommissioned officer education, distributed simulations, and training to support disaster relief operations. Additional missions include the Global War on Terrorism, Homeland Defense, facilitating training for responders to weapons of mass destruction (WMD) incidents, counter drug operations, information operations, and Partnership for Peace.

- Facilitate Command, Control, Communications, and Computing (C4) within the National Guard.

- Demonstrate the concept of "shared use" of the installed education, training, and information resources with public and private entities to foster economic development, improve educational levels, and provide information access for communities in which the National Guard is based.

The DTTP ORD contains performance and operational parameters for the DTT System. It is based in terms of minimum acceptable requirements and thresholds to satisfy the approved MNS. Distributed learning media originated or delivered by the system includes:

- Printed matter,
- Interactive multi-media instruction such as web-based or CD-ROM training,
- Interactive, real time video tele-training,
- Video and audio recordings,
- One- or two-way audio and/or video, and voice over Internet protocol,
- Simulators and simulation exercises,
- Other training materials available via the NIPRNet (Nonclassified Internet Protocol Routing Network) or commercial Internet,
- Collaborative virtual workspaces,
- Mission rehearsal, and
- Reach back planning opportunities.

1.2 Scope

The DTT System is the delivery mechanism used for DL courseware, primarily from The Army School System, but also from other appropriate DoD, federal government, and commercial sources.

The scope of DTTP is to refine the known functional requirements for the DTT System, maintain and revise the technical design as appropriate, and ensure the design meets or exceeds functional and operational requirements. The project includes enhancement of the current DL environment, evaluation of the supporting infrastructure (internal and external to the classroom), and a definition of support requirements (funds and staff, maintenance, and operation).

1.3 Assumptions and Constraints

1.3.1 Assumptions

Assumptions which affect this document are:

- The system design will be reviewed approximately once per year for technology improvement.
- Redesign will support continued interoperability of fielded classrooms.
- All classrooms will include a capability to deliver training in multiple modalities including synchronous and asynchronous audio/video, text and graphic presentation materials, simulations and simulation exercises, collaborative work, student to student and student to instructor interaction.
- Each design will include requirements to meet all DTTP objectives.

1.3.2 Constraints

Constraints upon requirements, which limit this document, are:

- Life cycle funding availability.
- All classrooms must meet the standards of Common Office Environment (COE) and PAM (Policies and Measures) 350-70-2.
- All classrooms must be able to deliver military training.
- Technology availability.
- Cost trade-offs will constrain the implementation of new technology.

1.4 Roles and Responsibilities

The following paragraphs identify the roles and responsibilities of various organizations involved in the development of the requirements defined in this document.

1.4.1 NGB-ART

NGB-ART is the functional proponent (combat developer in acquisition terms) for distributed learning in the ARNG. They are responsible for implementing DL to improve readiness. As such, they have primary responsibility for definition of requirements for the DTT System and making sure that the fielded system satisfies those requirements. They work closely with the Customer Focus Team (CFT) in the definition of requirements. In this role they:

- Generate requirements,
- Validate requirements,
- Participate in design reviews,
- Participate in Government Acceptance,
- Participate in the Requirements Control Board (RCB), and
- Continue to monitor field comments.

1.4.2 ANG DPDPD

ANG DPDD is the functional proponent for distributed learning in the ANG. As such, they have responsibility for definition of requirements and making sure that the fielded system satisfies those requirements. In this role they:

- Generate requirements,
- Validate requirements,
- Participate in design reviews,
- Participate in Government Acceptance,
- Participate in the Requirements Control Board (RCB), and
- Continue to monitor field comments.

1.4.3 NGB J6/CIO Customer Focus Team

The CFT is a part of the National Guard Bureau Office of the NGB J6/CIO. The CFT is the advocate for the customers of the DTTP. They are the liaison for the customer to the Army Program Executive Office Enterprise Information Systems (PEO-EIS) Program Office (PO) and proponents. The CFT manages the requirements through the Requirements Management process for the DTT System. The CFT chairs and provides administrative support to the Reserve Component RCB for DTTP. In this role they:

- Distribute Functional Requirements Document for review and comment to the PEO-EIS, Regional Training Institute (RTI) Commanders, National Guard Bureau – Army

Information Systems (NGB-AIS), TRADOC, proponent schools, and other DoD organizations as appropriate;
- Collect and track requirements;
- Review and analyze requirements;
- Maintain the Functional Requirements Document (FRD) [this document]; and
- Participate in the RCB

1.4.4 NGB J6/CIO

NGB J6/CIO is the executive advocate for DTTP.

1.4.5 Army Program Executive Office – Enterprise Information Systems Program Office

PEO-EIS PO is responsible for DTTP. They are the — system developer and provide operation support. As such, they design, acquire, test, and field the system. They are also responsible for initial equipment training and the establishment of a satisfactory maintenance plan. In this role they:

- Review requirements,
- Participate in the RCB,
- Dedicate resources to develop technical specifications / design,
- Serve as technical expert during design process,
- Participate in design reviews,
- Participate in Government Acceptance,
- Provide funding for new design of classroom,
- Provide funding for circuits,
- Continue to monitor field comments, and
- Facilitate / coordinate with TRADOC, proponent schools, ADL, and other organizations on technical design and interoperability issues.

1.4.6 NGB-Army Information Systems

NGB-AIS is the operating agent for the wide area communications system that supports distributed learning within the ARNG. In this role they:

- Review requirements and provide comments,
- Participate in the RCB,
- Dedicate resources, as required, to develop technical specifications / design,
- Participate in design reviews,

- Participate in Government Acceptance, and
- Continue to monitor field comments.

1.4.7 State National Guard and ARNG Field Operating Activities

State National Guard and ARNG Field Operating Activities are responsible for the operation of the individual classrooms. In this role they:

- Review requirements and provide comments,
- Participate in the RCB,
- Dedicate resources, as required, to develop technical specifications / design, and
- Participate in design reviews.

1.4.8 RCB

The RCB's primary role is to review, approve, and prioritize all requirements prior to submission to PEO EIS PO for analysis and implementation. No new functional requirements will be considered by PEO EIS PO until approved by the RCB.

The RCB also participates in the deviation/waiver request processes. They are responsible for reviewing and approving all deviation/waiver requests. A deviation/waiver request is a request to make a change from the DTT baseline at a specific location.

The Governance Working Group (GWG) reports back to the RCB on the Functional Area Team (FAT) initiatives and their associated Integrated Working Group (IWG) initiatives that affect the DTTP infrastructure.

1.5 References

The following documents provide reference materials for better understanding of DTTP:

- Army National Guard Operational Requirements Document (ORD) for a Distributive Training Technology (DTT) System, 30 June 2000. This document is referenced for historical purposes as it has not be updated. It is replaced by this document.
- Army National Guard Mission Needs Statement (MNS).
- Joint National Guard Advanced Distributed Learning Strategy.

2 FUNCTIONAL REQUIREMENTS

This section defines requirements for the DTTP Learning Environment. It is divided into seven functional areas:

- General Requirements,
- Courseware Repository and Distribution,
- System Security,
- System Interfaces,
- Command and Control,
- Shared Use, and
- Storable Classrooms.

2.1 General Requirements

General requirements are those that apply to the total environment and address such areas as overall audio / video, network, multimedia support, ancillary requirements, system sustainment, etc. This section will identify the top priority requirements.

a. The DTTP learning environment shall support asynchronous (individual students, self-paced and independent—in timing—of other students or instructors) training events.

b. The DTTP learning environment shall support synchronous (more than one student training at the same time with an instructor, students may be in more than one DTTP classroom) training events.

c. The DTTP learning environment shall support collective (a combination of multiple people working together on the same task, may include multiple locations and environments) training events. This requirement implies an electronic whiteboard or common editing of a document.

d. The DTTP learning environment will support live, virtual , and constructive training events including, but not be limited to Army Battle Command System (ABCS), Janus, One Semi-Automated Force (OneSaf), and Virtual Emergency Response Training System (VERTS).

e. The classroom shall have the capability to receive a live video feed from a remote location.

2.1.1 DTT Audio / Video Requirements

The most significant Audio/Video (A/V) functional requirements for DTTP facilities are documented below.

a. Students with normal vision shall be able to read graphics (e.g. topographical maps) from any workstation with the classroom lighted to normal office lighting levels.

b. Students with normal hearing shall be able to hear audio portion of videoconferences.

c. The A/V design shall be able to support auditoriums with a seating capacity up to 500 seats.

d. Video shall be studio quality (not less than 30 frames per second).

e. Each State / Territory shall be able to support intra-state video multi-point conference of various protocols (H.323, at a minimum).

f. The objective requirement is to be able to participate in a separate video teleconference (VTC) from each student workstation. The threshold is to be able to conduct three separate, simultaneous VTCs in each classroom.

g. Each State / Territory shall be able to provide intra-state audio back-up capabilities to the Video Multi-Conference Unit.

h. Each State / Territory shall be able to host multi-point audio only conferences up to 20 ports.

i. Each State / Territory shall be provided mobile 2-way VTC capability.

j. Each National Guard Bureau Forward Operating Agency (NGB FOA) and each TASS battalion location shall be outfitted to serve as a training origination site. See section 2.2.2

2.1.2 DTT Network Requirements

The most significant network functional requirements for DTTP facilities are documented below.

a. Students must be able to access the Internet through GuardNet XXI.

b. Students and Instructors shall be able to access and play video files from internal and external repositories using TRADOC approved media players.

c. Students shall be able to receive satellite broadcasts at their individual workstations. Instructors shall be able to receive satellite broadcast, and project those images to the students.

d. Students shall be able to stream video in a various formats in a one to one or one to many environments.

2.1.3 Sustainment

The sustainment requirements include:

a. The DTTP ORD states that classrooms shall be operable 14 hours a day, seven days a week with a minimum availability threshold of 92 percent and an operational objective for hardware and software availability for both synchronous and asynchronous training of 96 percent.

b. Surge requirements and training support for contingency operations may require operation of the system 24-hours a day, 7-days a week.

c. In support of this operational requirement, the DTTP classroom shall have maintenance on all critical components.

d. Site personnel are responsible for problem determination and reporting.

e. NGB-AIS is responsible for tracking problems, assisting site personnel in problem resolution, and dispatching maintenance personnel, when required.

f. Technical training shall be provided to site administration personnel and Military facility support personnel upon installation.

g. Critical Components must be replaced within 24 hours after a failure is reported.

2.1.4 Standardization

The standardization requirements include:

a. The DTTP classroom components (hardware and software) shall be compliant with Army Training Information Architecture (ATIA), Joint Technical Architecture – Army (JTA/JTA-A), and the Defense Information Infrastructure Common Operating Environment (DII COE) standards to ensure commonality with other DoD systems.

b. The DTTP classroom components shall adhere to industry standards (e.g., H.323, for video).

2.1.5 Compatibility

Any design changes shall be backward compatible with the currently installed DTT infrastructure. The DTT infrastructure is defined as GuardNet, the Distributed Learning Network (DLN) NT Domain, the Video Operations Center, all multi-media classroom components, and Command and Control VTC roll-about carts. Cost, schedule, and performance issues will be referred to the RCB for resolution.

2.1.6 Personnel Support

Additional personnel are required to manage, and operate each of the distributed learning facilities. The support staff shall be knowledgeable in all aspects of classroom operation.

2.1.6.1 Site Administrator

The Site Administrator shall have working knowledge of Microsoft Windows, Transmission Control Protocol/Internet Protocol (TCP/IP), and Automated Data Processing Equipment (ADPE) operations. The support roles are identified as follows:

a. Site Administrators shall serve as the first line of technical support for the NGB AIS Network Operations Center (NOC).

b. Site Administrators shall perform preventative and remedial maintenance on active classroom components.

c. Site Administrators shall verify classroom operability 30 minutes prior to session kick-off.

d. Site Administrators shall support all scheduled events in case of technical malfunctions (e.g., problem resolution).

e. Site Administrators support personnel for shared use will be provided by the individual state. This support may require an additional site operator that can be provided by state employees, contractors, or through agreements with other organizations. Federal employees acting within their Federal responsibilities or during Federal employment working hours shall not be used to support shared use.

2.1.6.2 Instructors

The roles of the instructor at the origination point are defined as:

a. Instructors shall be certified per TRADOC Reg. 350-18.

b. Instructors shall be certified as a DL Instructor.

c. Instructors shall be able to operate all classroom instructional equipment (e.g., document camera, instructor and student workstations, VTC hardware and software).

2.1.6.3 Instruction Support Staff

The role of the Instructor's support staff are identified as individuals that shall be:

a. Instructor Support Staff shall be SMEs in the course content and meet proponent requirements as stated in the Course Management Plan (CMP).

b. Instructor Support Staff shall be certified to give exams.

c. Instructors shall be able to assist the instructor in the conduct of the course.

d. Instructors shall be able to assist the instructor with administrative tasks (taking roll, handing out materials) at the remote site(s) in support of the instructor at the originating site.

2.1.7 Management

a. NGB-AIS NOC manages the network, which is defined as extending from the hubs to and including the classroom switch. All equipment, software, and communications within the classroom are managed by the site manager. The DTT system has a Command, Control and Communications mission. This requires that the National Guard Bureau be able to communicate with at least one DTT asset in the 50 states, three territories and the District of Columbia in case of a national emergency. NGB-AIS will provide sufficient resource to bridge between different protocols (H.323) and provide audio only backup to accommodate at least 56 locations. The 56 locations include the Readiness Center, Jefferson Plaza 1, the 50 states, three territories, and the District of Columbia. Please refer to paragraph 2.1.1 for operational requirements of DLN hardware and software components.

b. The NOC will manage and maintain the network from the Operations Center through the hubs and Joint Force Headquarters (JFHQ) to the switch in the classroom. The DLN domain shall have an overall availability of 99.95 percent.

2.2 Courseware Repository and Distribution System Requirements

Classrooms must be able to deliver courseware that was developed in accordance with emerging DoD standards. The Army Training Support Center (ATSC) has developed an electronic library that is used as a primary reference resource and source of correspondence courses used in Army training. The Army Training and Doctrine Digital Library (ATDDL) Reimer Digital Library (RDL) is the official repository of approved Army doctrine. The RDL mission is to provide transparent access to a distributed digital repository of accurate and timely training knowledge sets and interactive applications to support training of individuals and units for world wide audience. The AITS program maintains the Guard Collaborative Learning Source (GCLS) [http://gcls.ngb.army.mil], which is a website that provides a lot of information about Distance Learning including such things as: a classroom locator map, local schedules of VTCs, and a Distance Learning Course Catalog.

2.2.1 Courseware Origination

Courseware originates from many sources (military and civilian) and in many formats. The Courseware Management System (CMS) shall store multiple courseware formats, provide access to numerous internal and external repositories, and provide access to ARNG courseware development activities. The following list represents the highest priority for courseware origination. The CMS shall:

a. Support the NTC, and Joint Readiness Training Center (JRTC) soldier in the field training requirements.

b. Provide national and local level scheduling of all learning environment resources (e.g., classroom assets, Hub / JFHQ A/V capabilities, NOC Video Operations).

c. Provide capability to take the learning environment to other than traditional classrooms (e.g., motor pool, rifle range, hangars, inside armor vehicles). This capability could be provided in predetermined quantities for the TASS Battalions, RTIs, and issued based on scheduled events. Locations initially identified are NG Professional Education Center (NGB-PEC), Western ARNG Aviation Training Site (WAATS), Eastern ARNG Aviation Training Site (EAATS), LDC, and Training and Training Technology Battle Lab (T3BL).

d. Store and retrieve courseware material (documents, graphical material, video clips, full motion videos).

e. Provide access to and interoperate with other ADL repositories (e.g., Classroom for the 21st Century (CR XXI), TADLP, RDL, ATDDL).

2.2.2 Training Origination Sites

The following requirements apply to those sites whose primary mission is the origination of training. These sites include federal training centers and Regional Training Institutes.

a. A training delivery facility separate from the standard classroom. This could be a Video Teleconferencing Facility (VTF), a studio, or a classroom.

b. Ease of use in changing media. Crestron must react to instructors touch. The instructor must be able to reach or have remote control of each piece of equipment with minimal bending, either sitting or standing. Must be able to change media or advance materials within a media with one touch command.

c. Professional quality video camera (focal length, aperture, zoom ratio, picture resolution, audio quality).

d. Virtual set.

e. Studio quality lighting.

f. Teleprompter.

g. High resolution scan converter.

2.2.3 Courseware Administration

The following identifies the courseware administration requirements. Administration CMS shall consist of the following high-priority functions.

a. Meter and track the use of classroom resources.

b. Electronically report usage to the Plans, Operations, and Training Officer (POTO), NGB-ART, Director of Information Management (DOIM), and other organizations on courseware and classroom usage.

c. Provide a capability to de-conflict schedules based on pre-determined business rules.

d. Track student enrollment based on profiles (e.g., branch of service, active, reserve, Guard, federal or state civilian employee, private citizen).

e. Track student enrollment, status in course (completion, standing) and report status.

f. Validate for all MOS producing courses that the student is registered in Army Training Requirements and Resource System (ATRRS).

g. Provide a Point of Presence [potentially in each NG Armory] for NG members to access the training environment remotely.

2.2.4 Courseware Delivery – Instructor View

The following identifies the minimal functionality required by the Instructor for conduct of classes. An instructor at any DTTP facility shall be provided the capability to:

a. Originate and control two-way video/two-way audio with viewer response devices.

b. Originate and control one-way video/two-way audio with viewer response devices.

c. Originate and control one-way video/one-way audio with viewer response devices.

d. Record training sessions.

e. Locally generate files using standardized office application.

f. Access video on-demand.

g. Print, scan, fax, and copy documents.

h. Access the Internet, NIPRNet and Proponent School (e.g. RDL, Application Specific Topology Description Language (ASTDL), commercial entities or whatever organization has proponentcy for the subject matter.) services.

i. Play a video, insert a stationary picture, or have a background and "play box" for information behind the instructor position.

j. Display his own or other images separate from the display of students in the classroom. Students

k. Classroom shall provide a capability for instructor to write or draw images that can be accessed by all participating classrooms.

l. Play audio from instructor’s workstation over the room audio system and into the video transmission.

m. Allow student response microphone to be heard on the room audio system on top of audio from the VCR (Video Cassette Recorder).

2.2.5 Courseware Delivery – Student View

The following identifies the minimal functionality students shall be provided for participation in distributive classes. Students at any DTTP facility shall be provided the capability to:

a. Access courseware internal to GuardNet or from external repositories (e.g., InterNet, RDL, ATDDL, TRADOC Proponent Schools, commercial entities).

b. Student must be able to work in conjunction with other students, in the same or other locations, with all students having access/visibility to the common material.

c. View and listen to material that has been recorded in VHS (Video Home System) format.

d. Access digitally stored full motion video, documentation, presentation materials or other digital media available on a one-to-one or one-to-many basis.

e. Participate in one-way or two way audio or videoconferences and simulations.

2.3 System Security Requirements

Classified training and training materials must be able to be used in the DLN (.mil) domain. The system must support classified training, command and control events, and shared use with other government agencies.

2.3.1 General Requirements

The following are the general security requirements:

a. The system shall be certified to C2 (SECRET).

b. All Sensitive But Unclassified (SBU) data (social security numbers, credit card numbers) shall be protected prior to transmitting.

c. Workstation logon shall provide authorized users unique identification and protect the system from unauthorized use.

d. If computer present, system should have removable hard drive, to enable classified and unclassified use (similar to classified capable workstations).

2.3.2 Classified Video Teleconferencing

The following are the classified video teleconferencing requirements for the classroom:

a. The system shall provide the capability to conduct conferences, at the C2 (SECRET) level of security, including voice, video, data, and Defense Messaging System (DMS) communications.

b. The system shall provide the capability to conduct both non-secure and secure VTCs intrastate, between states (interstate), with other DoD and federal agencies.

c. The secure VTC capability shall be interoperable with all compatible, standards-based state or federal agency video endpoints. An endpoint is any device capable of H.323 communications. Specifically, interoperable with Governor's Homeland Security (HLS) VTC.

d. Secure VTC endpoints must be capable of operating independent of commercial power and terrestrial communications.

e. There shall be a minimum of one command and control secure VTC endpoint in each state.

f. The system shall support a secure VTC with a minimum of 60 CONUS (Continental US) and OCONUS (Outside the Continental US) simultaneously participating endpoints.

g. The system shall support a minimum of three simultaneous secure videoconferences. [This does not mean supporting three video conferences at one classroom, instead it means supporting three separate video conferences nationwide between classrooms.]

h. The endpoint must be capable of recording and capturing classified data used in conjunction with the videoconference.

i. The system must be compatible with current generation encryption equipment (KIV 7 & KG235) plus next generation encryption equipment that is already scheduled for fielding during the next 12 months.

j. System must demonstrate ability to work with existing DoD Classified and unclassified bridges, as well as Department of Homeland Security (DHS) classified bridge.

2.4 System Interface Requirements

The DTT system must interface with many diverse DoD and Civilian Schools. The bullets below identify the high priority system interface requirements.

2.4.1 RCAS

The system shall interface with the Reserve Component Automated System (RCAS) desktop computing devices for scheduled asynchronous, synchronous, or collective training events from the participant's desktop when such events are appropriate for such devices.

2.4.2 ATRRS

The system shall interface with ATRRS for all ATRRS managed training. This interface shall provide scheduling information of DTT assets; verify student enrollment, report student completion and standing. Sub-interface requirements are:

a. Register soldiers in MOS producing courses.

b. Schedule DTT assets with Army assets.

c. Verify soldier enrollment.

d. Report soldier progress, completion, and standing.

e. The system shall interface with the RDL, ADDTL, and TRADOC training facilities (e.g., CR XXI, TADLP).

2.4.3 Other

a. The system shall interface with the Army Continuing Education System (ACES).

b. The system shall interface with Army University On Line (AUOL).

c. WarriorNet

2.5 Command and Control Requirements

Command and Control is stated as the second objective for the DTT program. This enables the States and Territories to use DTT assets in case of state or national emergency. The following list defines command and control requirements:

a. The system shall be designed and implemented with an open architecture that provides an optimal ability for the individual states to communicate with their intrastate networks.

b. The system shall provide the ability for National Guard personnel to broadcast Situation Reports (SITREPS) from emergency locations.

c. The system shall provide for intrastate bridging between networks. The requirement is for training anytime, anywhere. Cost, schedule, and performance trade-offs must be decided by the RCB and are expected to change over time.

d. The system shall be able to record and broadcast emergency situations for After Action evaluation and future training of Rapid Response or First Responder Teams.

2.6 Shared Use Requirements

Sharing the DTT facilities with the local community is the third goal of the program. The following bullets provide high-level requirements for shared use of the DTT.

a. Identify user personnel by profile.

b. Track the use of DTT assets.

c. Bill individual, corporation, state or local government based on resource consumption.

2.7 Storable Classroom

There shall be a version of the classroom that does not occupy permanent space. All elements of this classroom should be able to be stored and reassembled as required. A storable classroom is one that can be put away when not in use so that the space can be used for other purposes. It is depended upon fixed access points to GuardNet at a fixed location. It does not imply that the classroom is portable. That is can easily be moved from one site to another.

a. A minimum number of tools shall be required to disassemble and store or to reassemble the classroom.

b. A minimum number of wiring connections shall be required to reassemble the classroom.

c. The classroom shall not have dedicated specialty furniture and should be usable in any designated classroom or meeting area on site.

d. The classroom shall be scaleable from one to eighteen student workstations.

e. The classroom shall be furnished with its own lockable storage containers.

f. The classroom shall, at a minimum, maintain the same functionality as other classrooms in the system.

g. The classroom shall have the capability to receive a live video feed from a remote location.

3 SYSTEMS DEVELOPMENT APPROACH

This section defines the approach that is used for establishing requirements and processing them from technical design through implementation.

3.1 Requirements Definition and Prioritization

Requirements can come from many sources. They come to the CFT who will manage the requirements and take them forward to the RCB for approval and prioritization. The process which is followed is the Requirements Management Process. This process is outlined in a separate document.

3.2 Development of Technical Alternatives

The RCB may request that the PEO-EIS PO engineering staffs analyze the functional requirements and develop preliminary designs, with trade-off analysis, objective evaluation criteria, and programmatic impact analysis. Cost, performance, and schedule trade-offs will be referred to the RCB for resolution. Assigning a requirement for analysis does not establish the priority of the requirement. The priority will be established by the RCB after review of the analysis.

3.3 Design

The RCB will prioritize requirements and provide the prioritized list of requirements to the PEO-EIS PO for design and implementation. The designs will be discussed with all the stakeholders and the DTTP Configuration Control Board (CCB) so the most viable design will be selected. This ensures the design meets or exceeds the functional and business requirements prior to construction. The PEO-EIS PO will come back to the RCB with their recommendation. The RCB will vote on the recommendation.

3.4 Construction and Developmental Testing

Once the CCB approval (as a minimum) is received, a ”prototype” classroom architecture will be built in the DTTP Engineering Labs. As the design is built, the team will develop integration, and installation procedures, as well as a formal test plan and the required Engineering Change Proposal (ECP). Once the new classroom is assembled, developmental testing will be conducted by the Engineering Team. Results of testing will be documented. When the Engineering Teams are confident the design meets or exceeds the stated operational and functional requirements,

their report will be forwarded to the DTTP CCB. The CCB and other stakeholders will evaluate conformance and determine if a Government Acceptance Test (GAT) should be conducted or if additional engineering work is required.

3.5 Documentation

Documentation shall be developed to define each configuration and the installation and operations procedures for that configuration as stand alone documents. The change control process should describe proposed changes in terms of the change to existing or previous designs. Configuration change descriptions should be published with each version of the documentation. Minimum design documentation includes:

- Detailed Design Document
- Integration Procedures
- Site Preparation Procedures
- Installation Procedures and Wiring Diagrams
- NOC and Video Operations Center Guidelines
- Maintenance Procedures.

3.6 Government Acceptance Test

Using the test plan developed during the construction phase, the expected results are measured against the actual performance of the individual components and the solution as a whole. Optimization of the components and solution will be completed in a controlled environment and then extended to the daily operations of classroom, which includes the current install base. The Integration, Installation and Training Teams will assist in the GAT Test Team at the NGB Enterprise Laboratory located at the Alexandria Co-Lab with validation of the new procedures developed during the prototype phase for the new classroom suite. Trade-offs in cost, schedule, and performance will be referred to the RCB for resolution. Once the training and testing is completed and the results documented, a Class I Engineering Change Proposal will be finalized for presentation to the DTTP CCB for final approval. The ECP will include a new bill of materials, new integration and installation procedures. The Class I ECP will be presented to the DTTP CCB for approval.

Appendices

A. DTTP Acronyms and Abbreviations

The following list of DTTP acronyms and abbreviations is provided for convenience and for keeping the list up-to-date.

ABCS	Army Battle Command System
ACES	Army Continuing Education System
ADL	Advanced Distributed Learning
ADPE	Automated Data Processing Equipment
AIS	Army Information Systems; see "NGB-AIS"
ANG	Air National Guard
ARNG	Army National Guard
ARNGRC	Army National Guard Readiness Center
ASTDL	Application Specific Topology Description Language (Internet 2 Reference)
ATIA	Army Training Information Architecture
ATDDL	The Army Training and Doctrine Digital Library
ATSC	Army Training Support Center
ATTRS	Army Training Requirements and Resource System
AUOL	Army University On Line
A/V	audio-visual
BDC	backup domain controller
C4	Command, Control, Communications, and Computing
CCB	Configuration Control Board
CD-ROM	compact disk
CFT	Customer Focus Team
CIO	Chief Information Officer
CM	configuration management
CMP	Courseware Management Plan
CMS	Courseware Management System
COE	Common Office Environment
CONUS	Continental United States
CR XXI	Classroom for the 21st Century
DB	database
DII COE	Defense Information Infrastructure Common Operating Environment
DHS	Department of Homeland Security
DL	Distributed Learning
DL POC	Distributed Learning Point of Contact
DLN	Distributed Learning Network; see DTTP
DMS	Defense Messaging System

DoD	Department of Defense
DOIM	Director of Information Management
DTT	Distributive Training Technology
DTTP	Distributive Training Technology Program
EAATS	Eastern ANG Aviation Training Site
ECP	Engineering Change Proposal
FAT	Functional Area Team
FRD	Functional Requirements Document
GAT	Government Acceptance Test
GIF	Graphics Interchange Format
GWG	Governance Working Group
HLS	Homeland Security
IWG	Integrated Working Group
JCATS	Joint Conflict and Tactical Simulation
JFHQ	Joint Force Headquarters
JRTC	Joint Readiness Training Center
JPEG	Joint Photographic Experts Group
JTA/JTA-A	Joint Technical Architecture - Army
KG235	A Sectéra In-Line Network Encryptor (INE) specifically designed to support IP/Ethernet operating over standard commercial networks requiring U.S. Government Type 1 security
KIV 7	The KIV-7 is a commercial off-the-shelf (COTS) cryptographic devices that provide protection for digital and voice communications.
LDC	Lightweight Deployable Communications
MNS	Mission Needs Statement
MOS	Military Occupational Speciality
MPEG	Motion Picture Experts Group
NG	National Guard
NGB	National Guard Bureau
NGB-AIS	National Guard Bureau—Army Information Systems
NGB-ART	Army Training Division, NGB
NGB-FOA	National Guard Bureau Forward Operating Agency
NGB-PEC	National Guard Bureau Professional Education Center
NIPRNet	Nonclassified Internet Protocol Routing Network
NOC	NGB Network Operations Center

OCONUS	Outside the Continental United States
OneSaf	One Semi Automated Force
ORD	Operational Requirements Document
OS	Operating System
PAM	Policies and Measures
PEC	Professional Education Center; see NGB-PEC
PEO-EIS	Army Program Executive Office Enterprise Information Systems
PO	Program Office
POTO	Plans, Operations, and Training Office(r)
RCAS	Reserve Component-Automated System
RCB	Requirements Control Board
RDL	Reimer Digital Library
RTI	Regional Training Institute
SBU	Sensitive But Unclassified
SCORM	Shareable Content Object Reference Model
SITREPS	Situation Reports
TADLP	The Army Distance Learning Program
TASS	The Army School System
TCP/IP	Transmission Control Protocol/Internet Protocol
TRADOC	Army Training and Doctrine Command
T3BL	Training and Training Technology Battle Lab
VERTS	Virtual Emergency Response Training System
VCR	Video Cassette Recorder
VHS	Video Home System (video cassette format)
VTC	video teleconference; video teleconferencing
VTF	Video Teleconferencing Facilities
WAATS	Western ANG Aviation Training Site
WARSIM	Warfighters Simulation 2000
WMD	Weapons of Mass Destruction

B. Current Capability Tracking Matrix

Number	Description	Implemented	Comment
General Requirements			
2.1.a	Support asynchronous training events.	Yes	
2.1.b	Support synchronous training events	Yes	
2.1.c	Support collaboration by students on same tasks	Yes	Collaborative environment is not considered satisfactory
2.1.d	Support Simulations	Yes	Individual platforms my require specialized software
2.1.e	Receive Remote live video feed	No	
General Requirements – DTT Audio/Video			
2.1.1.a	Read graphics	Yes	
2.1.1.b	Hear audio	Yes	
2.1.1.c	Auditoriums	Yes	
2.1.1.d	Studio quality video	Yes	
2.1.1.e	Support Multi-point video	No	MCU will provide intrastate points.
2.1.1.f	Support Multiple VTCs in each classroom	No	One CODEC limits a room to one VTC.
2.1.1.g	Audio back up	Yes	
2.1.1.h	Audio conferencing	??	
2.1.1.i	Mobile VTC	No	
2.1.1.j	Courseware origination	No	
General Requirements – DTT Network			
2.1.2.a	Internet access	Yes	
2.1.2.b	Play video	Yes	
2.1.2.c	Satellite to the desktop	Yes	
2.1.2.d	Stream video	No	Limited by AIS to protect bandwidth
General Requirements -- Sustainment			
2.1.3.a	14/7 - 24/7; 96 percent hardware and software availability	Yes	

Number	Description	Implemented	Comment
2.1.3.b	Surge Requirement of 24/7	Yes	
2.1.3.c	AIS maintenance	No	Maintenance is provided by DTTP RCAS
2.1.3.d	Site Personnel	Yes	
2.1.3.e	NGB-AIS responsibilities		
2.1.3.f	Technical training	Yes	
2.1.3.g	Replace critical components	Yes	In general, not always achieved
General Requirements -- Standardization			
2.1.4.a	Compliant with DoD Standards	Yes	
2.1.4.b	Compliant with industry standards	Yes	
General Requirements – Compatibility			
2.1.5	Compatibility	Yes	
General Requirements -- Personnel Support – Site Administrator			
2.1.6.1.a	First line tech support	Yes	When available
2.1.6.1.b	Perform maintenance	Yes	But varies by state and by classroom
2.1.6.1.c	Verify operability	Yes	
2.1.6.1.d	Resolve problems	Yes	Varying capability
2.1.6.1.e	Shared use personnel	Yes	
General Requirements -- Personnel Support -- Instructors			
2.1.6.2.a	TRADOC Certified	Yes	
2.1.6.2.b	Certified instructor	Yes	Can be certified through a PEC course
2.1.6.2.c	Operate equipment	Yes	
General Requirements -- Personnel Support – Instruction Support Staff			
2.1.6.3.a	SME	Yes	
2.1.6.2.b	Give exams	Yes	
2.1.6.3.c	Assist conduct of course	Yes	
2.1.6.3.d	Administrative tasks	Yes	
General Requirements -- Management			
2.1.7.a	Bridge to 56 locations	Yes	
2.1.7.b	Availability of 99.95%	???	
Courseware repository and Distribution System – Courseware Origination			

Number	Description	Implemented	Comment
2.2.1.a	NTC and JRTC	???	
2.2.1.b	scheduling	No	
2.2.1.c	Other than traditional classrooms	No	Originally provided for 67T
2.2.1.d	Store and retrieve	Yes	
2.2.1.e	Access to repositories	Yes	
Courseware Repository and Distribution System – Training Origination Sites			
2.2.2.a	Separate facility	No	
2.2.2.b	Ease of use	Yes	
2.2.2.c	Quality video camera	???	
2.2.2.d	Virtual set	No	
2.2.2.e	Quality lighting	No	
2.2.2.f	Teleprompter	No	
2.2.2.g	Scan converter	Yes	
Courseware Repository and Distribution System – Courseware Administration			
2.2.3.a	Meter use	Yes	
2.2.3.b	Report use	No	
2.2.3.c	De-conflict schedules	No	
2.2.3.d	Track enrollment	No	
2.2.3.e	Track status	No	
2.2.3.f	Validate ATRRS registration	No	
2.2.3.g	Point of presence	No	
Courseware Repository and Distribution System – Instructor View			
2.2.4.a	Two-way audio and video	Yes	
2.2.4.b	One-way video, two-way audio	Yes	
2.2.4.c	One-way audio and video	Yes	
2.2.4.d	Record sessions	Yes	
2.2.4.e	Generate files	Yes	
2.2.4.f	Access video	Yes	
2.2.4.g	Print, fax, scan, copy	Yes	
2.2.4.h	Access internet, NIPRNet	Yes	
2.2.4.i	Virtual set	No	
2.2.4.j	Display instructor image	Yes	

Number	Description	Implemented	Comment
2.2.4.k	White board	No	
2.2.4.l	Audio over room audio	Yes	
2.2.4.m	Student mike over room audio	???	
Courseware Repository and Distribution System – Student View			
2.2.5.a	Access courseware	Yes	
2.2.5.b	Collaborative work	No	
2.2.5.c	View VHS	Yes	
2.2.5.d	Access video	Yes	Streaming video limited by AIS
2.2.5.e	One- or two-way VTC	Yes	
System Security – General Requirements			
2.3.1.a	Secret	No	
2.3.1.b	Protect SBU	Yes	
2.3.1.c	User ID	Yes	
2.3.1.d	Removable hard drive	No	
System Security – Classified Video Teleconferencing			
2.3.2.a	C2	No	
2.3.2.b	Secure VTC	No	
2.3.2.c	Compatibility	No	
2.3.2.d	Independent communications	No	
2.3.2.e	One C&C secure VTC per state	No	
2.3.2.f	60 Simultaneous endpoints	No	
2.3.2.g	3 simultaneous VTCs	???	
2.3.2.h	Record classified data	No	
2.3.2.i	Compatible encryption	No	
2.3.2.j	Compatible bridges	No	
System Interfaces -- RCAS			
2.4.1	RCAS	Yes	
System Interfaces -- ATRRS			
2.4.2.	ATRRS interface	No	
2.4.2.a	Register soldiers	No	
2.4.2.b	Schedule	No	
2.4.2.c	Verify enrollment	No	

Number	Description	Implemented	Comment
2.4.2.d	Report progress	No	
2.4.2.e	RDL, ADTDL, TRADOC	Yes	
System Interfaces -- Other			
2.4.3.a	ACES	No	
2.4.3.b	AUOL	???	
2.4.3.c	WarriorNet	Yes	
Command and Control			
2.5.a	State networks	Yes	But somewhat variable
2.5.b	Emergency locations	No	
2.5.c	Bridging to state networks	Yes	But somewhat variable
2.5.d	Record emergency operations	No	
Shared Use			
2.6.a	User profile	Yes	
2.6.b	Track use	Yes	
2.6.c	Bill use	No	This requirement may have been deleted by the RCB
Storable Classroom			
2.7.a	Minimum tools for assembly	No	
2.7.b	Minimum wiring	No	
2.7.c	No dedicated furniture	No	
2.7.d	Scaleable	Yes	
2.7.e	Storage containers	No	
2.7.f	Same functionality	No	
2.7.g	Receive live video	No	